

WHAT IS CLAIMED IS:

- 1 1. A developing method comprising:
2 providing a wafer in a reaction space, wherein said wafer has an exposed
3 photoresist thereon;
4 coating a developing solution on a surface of said wafer;
5 rotating said wafer;
6 rinsing a normal surface and a backside surface of said wafer; and
7 stopping rinsing said normal surface of said wafer while keeping rinsing
8 said backside surface of said wafer for a specific time period.
- 1 2. A developing method according to claim 1 wherein said reaction
2 space is within a developing coating apparatus.
- 1 3. A developing method according to claim 1 wherein rotating said
2 wafer comprises increasing a rotating rate of said wafer.
- 1 4. A developing method according to claim 3 further comprising
2 stopping rotation of said wafer for a period to perform a developing step on said wafer
3 before increasing the rotating rate of said wafer from a low speed to a high speed.
- 1 5. A developing method according to claim 3 wherein rotating said
2 wafer comprises increasing the rotating rate of said wafer from a low speed of about 30-90
3 rpm to a high speed of about 1000-4000 rpm.
- 1 6. A developing method according to claim 1 further comprising
2 exhausting said reaction space while rotating said wafer.
- 1 7. A developing method according to claim 1 wherein rinsing said
2 backside surface of said wafer is performed by a nozzle disposed near said backside
3 surface of said wafer.
- 1 8. A developing method according to claim 7 wherein said nozzle is
2 disposed to direct a solution to said backside surface of said wafer at an incident angle of
3 substantially less than about 90 degrees relative to said backside surface of said wafer.

1 9. A developing method according to claim 1 wherein said specific
2 time period of stopping rinsing said normal surface of said wafer and keeping rinsing said
3 backside surface of said wafer is at least about five seconds.

1 10. A developing method according to claim 1 wherein rotating said
2 wafer comprises rotating said wafer at a sufficiently low speed while coating said
3 developing solution on said surface of said wafer to form a fluid wall to prevent said
4 developing solution from flowing to at least a portion of said backside surface of said
5 wafer.

1 11. A method for reducing contamination formed on a backside surface
2 of a wafer, the method comprising:
3 providing a wafer in a reaction space, wherein said wafer has an exposed
4 photoresist thereon;
5 coating a developing solution on a surface of said wafer;
6 rotating said wafer and exhausting said reaction space while rotating said
7 wafer;
8 rinsing a normal surface and a backside surface of said wafer; and
9 stopping rinsing said normal surface of said wafer and while keeping
10 rinsing said backside surface of said wafer for a specific time period, thereby reducing the
11 contamination forming on said backside surface of said wafer.

1 12. A method according to claim 11 wherein said reaction space is
2 within a developing coating apparatus.

1 13. A method according to claim 11 wherein rotating said wafer
2 comprises increasing a rotating rate of said wafer.

1 14. A method according to claim 11 wherein exhausting said reaction
2 space comprises generating an outward-flowing field at said backside surface of said
3 wafer.

1 15. A method according to claim 11 wherein rinsing said backside
2 surface of said wafer is performed by a nozzle disposed near said backside surface of said
3 wafer.

1 16. A method according to claim 15 wherein said nozzle is disposed to
2 direct a solution to said backside surface of said wafer at an incident angle of substantially
3 less than about 90 degrees relative to said backside surface of said wafer.

1 17. A method according to claim 11 wherein said specific time period
2 of stopping rinsing said normal surface of said wafer and keeping rinsing said backside
3 surface of said wafer is at least about five seconds.

1 18. A developing method, applied in a developing coating apparatus
2 comprising a chuck, at least one nozzle and a groove, the method comprising:
3 providing a wafer and supporting said wafer on said chuck of said
4 developing coating apparatus with a backside surface of the wafer facing said groove,
5 wherein said wafer has exposed photoresist thereon;
6 coating a developing solution on a surface of said wafer;
7 rotating said wafer and exhausting said developing coating apparatus to
8 form a water wall between said wafer and an outer sidewall of said groove;
9 rinsing a normal surface and rising said backside surface of said wafer by
10 said at least one nozzle; and
11 stopping rinsing said normal surface of said wafer and keeping rinsing said
12 backside surface of said wafer for a specific period, thereby removing contamination
13 remaining on said lower surface of said wafer.

1 19. A developing method according to claim 18 further comprising
2 increasing a rotating rate of said wafer prior to rinsing said wafer.

1 20. A developing method according to claim 18 wherein said nozzle is
2 disposed to direct a solution to said backside surface of said wafer at an incident angle of
3 substantially less than about 90 degrees relative to said backside surface of said wafer.

1 21. A developing method according to claim 18 wherein said specific
2 time period of stopping rinsing said normal surface of said wafer and keeping rinsing said
3 backside surface of said wafer is at least about five seconds.